CLAIMS

What is claimed:

1. A method for creating a network configuration comprising:

5   selecting a Fundamental Unit;

specifying constraints, speed hierarchies, and preferences;

selecting a cycle and routing demands based upon the constraints, speed hierarchies, preferences and the Fundamental Unit.

10   2. The method of claim 1 further comprising the step of separating demands into low degree of separation and high degree of separation.

3. The method of claim 1 further comprising defining degree of separation.

15   4. The method of claim 1 further comprising routing low degree of separation demands.

5. The method of claim 1 further comprising routing high degree of separation demands.

20   6. The method of claim 1 further comprising identifying low degree of separation demands that have been routed on low utilization rings.

7. The method of claim 1 further comprising routing low degree of separation demands by performing the step of CNE selection.

5   8. The method of claim 1 further comprising the step of routing low degree of separation demands by performing the step of demand routing.

9. The method of claim 1 further comprising the step of placing a CNE.

10   10. The method of claim 1 further comprising routing high degree of separation demands by performing the step of CNE selection.

11. The method of claim 1 further comprising routing high degree of separation demands by performing the steps of demand routing.

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12.   A method for creating a network configuration comprising:

receiving demands, nodes, spans, speed hierarchy, equipment, weights,

preferences, and constraints;

separating demands into groups based on their shortest path and the maximum

20   cycle size;

routing each demand group; and

re-routing low utilizationrings.

13. The method of claim 12 Common elements further comprising selecting a

CNE.

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14. The method of claim 12 further comprising routing demands.

15.   A programmable apparatus for creating a network configuration comprising:

        a computer having a memory; and

10   a software program installed in said memory;

wherein the computer is directed by said software program to receive input comprising

        constraints, preferences, a speed hierarchy, and selection of a Fundamental Unit;

and responsive to receiving said input, the computer is directed to:

        select a cycle and route demands based upon the constraints, speed hierarchies,

15   preferences and the Fundamental Unit.

16.   The programmable apparatus of claim 15 wherein the speed hierarchy comprises:

        a list of tuples;

        wherein one of said tuples is the Fundamental Unit.

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17. The programmable apparatus of claim 15 wherein the speed hierarchy contains a Multiple Unit; and wherein said Multiple Unit is a permissible communications rate in a communications network;

wherein said Multiple Unit is described as an ordered tuple having both an alphanumeric label and a multiple value; and

wherein the multiple value may be any positive value greater than one.

18. The programmable apparatus of claim 15 wherein said list comprises a Multiple Unit with a multiple value of the Fundamental Unit.

19. The programmable apparatus of claim 15 wherein the Fundamental Unit is the lowest permissible communications rate permissible in the communications network, and wherein the Fundamental Unit is described as an ordered tuple having an alphanumeric label and a multiple value of one.

20. The programmable apparatus of claim 15 wherein the speed hierarchy is a T-Carrier.

21. The programmable apparatus of claim 15 wherein the speed hierarchy is an E-Carrier.

22. The programmable apparatus of claim 15 wherein the speed hierarchy is an SDH.

23. The programmable apparatus of claim 15 wherein the speed hierarchy is a SONET.

5   24.   The programmable apparatus of claim 15 wherein the speed hierarchy is an

Ethernet.

25. The programmable apparatus of claim 15 wherein the speed hierarchy is a DS-n.

10   26. The programmable apparatus of claim 15 wherein the speed hierarchy is an E-n.

27. The programmable apparatus of claim 15 wherein the speed hierarchy is an Optical

Carrier (OC-n).

15   28.   The programmable apparatus of claim 15 wherein the speed hierarchy is a

Synchronous Transport Module (STM-n).

29.   The programmable apparatus of claim 15 wherein the speed hierarchy is a

Synchronous Transport Signal (STS-n).

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30. The programmable apparatus of claim 15 further wherein the computer is further directed to route low degree of separation demands first and route high degree of separation demands second.

5   31.   A computer readable memory for causing a computer to create a network configuration comprising:

a computer readable storage medium;

a computer program stored in said storage medium;

wherein, the storage medium, so configured by the computer program, causes the

10   computer to:

receive constraints, preferences, a speed hierarchy, and selection of a Fundamental Unit;

and responsive to receiving said input, the computer is directed to:

separate demands into groups based on their shortest path and the

15   maximum cycle size; and

route each demand group.

32.   The computer readable memory of claim 31 wherein the computer is further directed to re-route low utilization rings.

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33. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy is T-Carrier.

34. The computer readable memory of claim 31 wherein the Fundamental Unit is from

5   a speed hierarchy E-Carrier.

35. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy SDH.

10   36. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy SONET.

37. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy Ethernet.

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38. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy DS-n.

39. The computer readable memory of claim 31 wherein the Fundamental Unit is from

20   a speed hierarchy E-n.

40. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy Optical Carrier (OC-n).

41. The computer readable memory of claim 31 wherein the Fundamental Unit is from a
5   speed hierarchy Synchronous Transport Module (STM-n).

42. The computer readable memory of claim 31 wherein the Fundamental Unit is from a speed hierarchy Synchronous Transport Signal (STS-n).

10   43. A computer implemented process to create a network configuration given demands, nodes, spans, speed hierarchy, equipment, weights, preferences, and constraints comprising: using a computer, performing the following series of steps:

   step 1, determining a Fundamental Unit;

   step 2, separating demands into groups based on their shortest path and the
15   maximum cycle size;

   step 3, routing each demand group; and

   step 4, re-routing low utilizationrings.

44. The computer implemented process of claim 42 wherein the step of determining a
20   Fundamental Unit further comprises selecting a speed hierarchy from the group consisting of T-Carrier, E-Carrier, SDH, SONET, Ethernet, DS-n, E-n, Optical Carrier

(OC-n), Synchronous Transport Module (STM-n) and Synchronous Transport Signal (STS-n).

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